Section A:								
Course Code	MAT1XX							
Course Title	Number Theory							
Course Credits	4	**No. of Contact Hours/week**	**L:**	3	**T:**	1	**P:**	0
School	School Of Natural Sciences							
Offered By	Mathematics							
Method of Instruction:	In Person		**Offered in:**	Monsoon Semeste	Full Semster			
Check each box, when applicable, if the course covers one or more of the below listed attributes								
☐	**REALS**	☐	**VELS**	☐	**DISE**			
Prerequisites	None							
MAT484								
Fill this, if applicable: A Similar Course Was Offered With Code ..... In Year								

NOTE:

Section B:This course is offered as (use checkbox) for which Programs			
☒	Major Core for:	Mathematics	Not required
☐	Major Elective for:	Enter The Name Of the Program(S) For Which This Is a Major Elective	Instructor's Approval
☒	UWE for:	All	Not required
☐	Project /UG Thesis / Internship	Any Other Information	Instructor's Approval
☐	CCC for:	Choose a Category	Instructor's Approval
☐	Specialization (If applicable)	Mention The Specialization	Instructor's Approval
☐	Minor (If applicable)	Mention The Minor(S)	Instructor's Approval
Estimated No. of Seats:	40	Estimated Number of Sections	1

Section C: State the Program Learning Goals of the Major Degree Program mapped to the Core Course (Applicable to Major Core courses only)
PLG1
PLG2

Section D: State the Course Objectives / Aim (Specific details of what the course intends to achieve in terms of student knowledge and ability. Items should begin with phrases such as "To provide students with …", "To enable students to …", "To develop students' skills in …" and so on.)
• To equip students with the ability to recognize and apply key properties of integers, including the Well-Ordering Principle, prime numbers, unique factorization, the division algorithm, and congruence relations. • To foster the development of logical reasoning skills. • To enhance students' problem-solving abilities through mathematical exploration. • To cultivate abstract thinking and a deeper conceptual understanding of mathematical structures.

Section E: State the Learning Outcomes (A list of what students will know or be able to do as a result of successfully completing the course. Should be expressed as knowledge, skills, or attitudes.)
On successful completion of the course, students will be able to:
1) Understand The Concept Of Divisibility, Finding The Greatest Common Divisor (GCD) And Least Common Multiple (LCM), Prime Factorization, And Properties Of Prime Numbers. 2) Grasp The Definition Of Congruences, Working With Residue Classes, Performing Arithmetic Operations Modulo N, And Solving Linear Congruences. 3) Learn About Arithmetic Functions Like Euler's Totient Function And Their Properties. 4) Develop Skills In Using Mathematical Induction, Proof By Contradiction, And Other Proof Techniques To Demonstrate Theorems In Number Theory. 5) Apply The Learned Concepts And Techniques To Solve A Variety Of Problems In Number Theory, Including Those Involving Diophantine Equations (Equations With Integer Solutions). 6) Develop Algorithmic Approaches To Solve Problems, Such As Finding The GCD Using Euclid's Algorithm Or Generating Prime Numbers.

Section F: State if course contributes to any skill development
The Course Includes A Python Programming Component To Allow Students To Implement And Apply The Concepts Learned In Number Theory. This Hands-On Approach Helps Students Gain A Practical Understanding Of How These Concepts Function In Computational Settings. This Approach Also Helps In Developing Computational Skills, Enabling Students To Bridge Theoretical Understanding With Practical Implementation.

Section G: Module-wise Curriculum Content (Syllabus, Lab work, Project, Term paper, Group work, etc.)
Syllabus: First nine chapters of the book titled "Elementary Number theory" by David M. Burton. Remaining chapters are for presentations depending on the response of students. Topics include: Mathematical Induction, Binomial Theorem, Divisibility, Primes, Congruences, Fermat's Theorem, Number theoretic functions, Euler's Generalization, Primitive Roots and Indices, and Quadratic Reciprocity. Lab Work: To apply the concepts learned in Number Theory in Python and see the practical understanding of how these concepts function in computational settings. Note that the lab work is integrated into the lectures and tutorials, and will be conducted and discussed during lecture sessions as and when needed. Add additional sheet(s), if required

Section H: Text Book(s), Reference book(s) and any other study material
Text Book: Elementary Number theory by David M. Burton Reference Books for Number Theory: 1) Elementary Number Theory by Gareth A. Jones 2) Elementary Number Theory and Its applications by Kenneth H. Rosen 3) A Classical Introduction to Modern Number Theory by Ireland and Rosen Online courses and tutorials • Udacity's Programming Foundations with Python course • CodeAcademy's Learn Python course • w3School's Python tutorial Books for Python • You can always Learn Python the hard way. (Python 3.x is the default here.) • Learning Python, 5th Edition, by Mark Lutz. • When you're ready for the next step, there's Fluent Python, by Luciano Ramalho.

Section I: Please fill in all the rows for the applicable rows. For evaluation component not included in the list, use the last two rows and mention the evaluation component in the corresponding last column. Please see the NOTE below this box for the prorate policy.

	Component	Weightage %	Missed Graded Component Policy	Use of Gen AI policy	Any Other Information
☒	Mid Sem Exam	30.00	Retake of Graded Component	Please Selec	other info
☒	End Sem Exam	30.00	I grade awarded on approval from Dean Ac	Please Selec	other info
☐	Quiz(s)	0.00	Please Select	Please Selec	other info
☒	Assignment(s)	20.00	Retake of Graded Component	Please Selec	other info
☒	Lab	20	Retake of Graded Component	Please Selec	other info
☐	Project	0.00	Please Select	Please Selec	other info
☐	Case Studies	0.00	Please Select	Please Selec	other info
☐	Group Discussion	0.00	Please Select	Please Selec	other info
☐	Any Other Component	0.00	Please Select	Please Selec	other info
☐	Any Other Component	0.00	Please Select	Please Selec	other info
	Total **Weightage** (%)	80.00			

Note:

a) While you may mark multiple evaluation components for pro-rate. However, if a particular student misses multiple evaluations, *not more than 20% of the evaluation can be prorated for that student.*

b) The best n out of m: Please make sure that n < m.

c) Award of 'I' grade is applicable only in the case of the End-term Exam. Additionally, end-term exams or final assessments cannot be prorated or waived.

d) Individual faculty can decide the prorate policy for each component.

e) 'None' as an option can only be used in exceptional cases, for example lab evaluated by an external expert

Section J: Grading Policy (*Tick the one You intend to follow)*				
☒	**Relative** Grading	93% Will Definitely Be A And 40% Will Definitely Be Pass, But The Cutoffs May Be Lowered Depending On Class Performance.		Total marks will be rounded UP while doing the final grading
☐	Absolute Grading	**Grade**	**Range** *(replace M's appropriately)*	Please Mention The Rounding Off Policy And Any Other Information
		A	M1 <= marks <= M2	
		A-	M1 <= marks <= M2	
		B	M1 <= marks <= M2	
		B-	M1 <= marks <= M2	
		C	M1 <= marks <= M2	
		C-	M1 <= marks <= M2	
		D	M1 <= marks <= M2	
		E	M1 <= marks <= M2	
		F	M1 <= marks <= M2	

Section K: Details about instructors teaching this course. For multiple instructors in a course, mention each name once after the other					
Name of the Instructor(s):	Neha Gupta Prof XYZ Prof ABC			**Section(s)**	L1 L1, L2, L3
Office Location	A111f K 120 L 325	**Tel. Extension***	265	**Email:**	neha.gupta@snu.edu.in abc@snu.edu.in xyz@snu.edu.in
About the Instructor(s): Click Here To Enter About 250 Words about each instructor teaching the course`					

***** - Optional

Section L: Office Hours
Please let the students know the day(s) and time slot(s) for any consultation. You may update this at the start of the semester.

Section M: Any other information
Any other information you would like to specify in relation to the above course